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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/446,875 | 03/23/2000 | HUBERTUS E.M. STASSEN | B758.312-1 | 3019 |
| 7590 | 01/22/2004 | | EXAMINER | |
| KINNEY & LANGE THE KINNEY & LANGE BUILDING 312 SOUTH THIRD STREET MINNEAPOLIS, MN 554151002 | | | RIDLEY, BASIA ANNA | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1764 | |

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|---|--|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/446,875  | STASSEN ET AL. Art Unit 1764  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 October 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 12-19 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 22 December 1999 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7,8.

4) Interview Summary (PTO-413) Paper No(s). _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

Response to Amendment

1. In the Oath / Declaration applicants requested entry of the amendment filed 16 August 1999 under PCT Article 19. Said amendment has been entered, even though said amendment was not filed under PCT Article 19. Accordingly, applicants' claims filed 16 August 1999 have been examined in this application.

Election/Restrictions

2. Applicant's election with traverse of Invention II, Species C, claim(s) 12-19 in Paper No. 10 is acknowledged.

The traversal is on the ground(s) that the examiner did not state any special technical features distinguishing between either the Inventions I and II or between the Species A, B or C.

This is not found persuasive. The examiner has stated in the Office action that the "Group I lacks specific structural elements of the apparatus which are the special technical feature of Group II", therefore the structural elements which are not recited in the method claims, for example: a high-pressure pump, an elongated tubular reactor having an inlet for aqueous fluid at the first end, said reactor provided in the chamber of the incinerator and separated from the incinerator by a heat conducting wall, etc., are the special technical features required for Group II and lacking from Group I. Similarly in the requirement for Species election, the examiner has stated that said Species, as shown in Fig. 1-3 are mutually exclusive, therefore they inherently have special technical features which they do not share, for example: Species A, as shown in Fig. 1, requires exchange of heat between fluid leaving the elongated first chamber and fluid returned from the separation vessel, while Species B and C, as shown in Fig. 2-3, require exchange of heat between

said fluid leaving the elongated first chamber and fluid entering said elongated first chamber; further, Species B, as shown in Fig. 2, requires exchange of heat between fluid leaving the incinerator chamber and fluid leaving the separation vessel, while Species C, as shown in Fig. 3, requires heat exchange between said fluid leaving the incinerator chamber and oxidant containing gas entering said incinerator chamber.

Further the applicant argues that both inventions and all three species require an elongated tubular reactor to be operated under high pressure and exchanging heat wherein heat losses are supplemented with additional heat, therefore they all share the same special technical features.

This is not found persuasive. For groupings of claims to have unity of invention two criteria must be met: there must be a technical relationship among the groups of inventions involving the same or corresponding special technical feature and the special technical feature must define a contribution over the prior art (see PCT Rule 13.2). In the instant case, contrary to applicant's arguments, the Invention I does not require an elongated tubular reactor to be operated under high pressure, as evidenced by claim 1, therefore Inventions I and II do not share what applicant defines as the special technical feature. Further, while all three species do require elongated tubular reactor to be operated under high pressure and exchanging heat wherein heat losses are supplemented with additional heat, said features do not define a contribution over the prior art, as evidenced by Binning et al., EP 240 340 (see abstract which recites an apparatus comprising an elongated tubular reactor to be operated under high pressure and exchanging heat wherein heat losses are supplemented with additional heat).

The restriction requirement is still deemed proper and is therefore made FINAL.

3. Claim(s) 1-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

Information Disclosure Statement

4. The examiner notes that form PTO-1449 included with Information Disclosure Statement filed on 23 March 2000 consisted of one sheet numbered "Sheet 2 of 2". The same was true for Information Disclosure Statement filed on 24 April 2000. Applicant is advised that any missing element(s) should be submitted in separate Information Disclosure Statement and that the date of submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Specification

5. The title of the invention is not descriptive as it encompasses both, the elected and non-elected, inventions. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

6. The following are some examples of the drawing objections. The actual objections are too numerous to point out specifically. Examples of such instances are as follows:

The drawing(s) are objected to as failing to comply with 37 CFR 1.84(q) because they include multiple reference character(s) which are lacking lead line(s) between themselves and the detail(s) to which they are referring, e.g. 3, 9, 10, 12, 17, 18, 23 in Fig. 1 and/or 2. Applicant is reminded that reference characters which do not need lead lines because they indicate surface or cross-section on which they are placed must be underlined to make it clear that a lead line has not been left out by mistake.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign(s) mentioned in the description: e.g.: "heat exchanger 9' " (P9/L24) is not

in Fig. 2; “heat exchanger 23’ ” (P10/L1-2) is not in Fig. 2.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include reference sign(s) not mentioned in the description: e.g.: 21 in Fig. 2.

The drawings are objected to under 37 CFR 1.83(a) because Fig. 2 fails to show a turbine 20 as described in the specification (P9/L25-33), but rather reference number 20 seems to refer to a heat exchanger. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The applicant is reminded that the above instances are merely exemplary and that the all drawings should be carefully reviewed and revised to avoid objections.

Claim Objections

7. Claims 12-19 are objected to because of the following informalities:
 - in claim 12, lines 4-5, for claim clarity, “aqueous fluid poor in carbonaceous material to be gasified” should be replaced with --aqueous fluid poor in carbonaceous material--;
 - claim 12, lines 13 and 19-20, for claim language consistency, --tubular-- should be inserted in front of “reactor”;
 - claim 12, line 17, for claim language consistency, “incinerator” should be replaced with -- chamber--;
 - claim 12, line 23, for claim language consistency, “and the exhaust of the reactor” should be replaced with --and wherein the outlet of the tubular reactor--;
 - in claim 15, lines 3-4, for claim clarity, “a carbonaceous material-depleted aqueous fluid to be

gasified" should be replaced with --a carbonaceous material-depleted aqueous fluid--;

- in claim 15, line 8, for claim clarity, "inlet opening for the thermal treatment of aqueous fluid (...)” should be replaced with --inlet opening for the aqueous fluid (...)--;
- in claim 15, lines 11-17, for claim clarity, "heat-conducting wall defines a course of treatment along which, after separation of the combustible gas, the aqueous fluid comprising carbonaceous material to be gasified is conducted in counterflow to an aqueous fluid which, as a result of thermal treatment, has become poor in carbonaceous material to be gasified and has been separated from combustible gas" should be replaced with --heat conducting wall defines a course of treatment along which the aqueous fluid comprising carbonaceous material to be gasified is conducted in counterflow to an aqueous fluid which, as a result of thermal treatment, has become poor in carbonaceous material and which has been separated from combustible gas";
- claim 15, line 26, for claim consistency, "has separated" should be replaced with --has been separated--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 12-14 and 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms "high pressure pump" and "feeding under high pressure" in claim 12 are a relative terms which render the claim indefinite. The term "high pressure" is not defined by the claim, the

specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. How high should the pressure be to read on the claimed invention?

Claim 19 is vague and indefinite because the recitations “the first chamber surrounds (...) the second chamber” and “the heat conducting surface surrounds (...) the first chamber” are not consistent with structure recited prior to said recitation. Claim 19 depends from claim 18, which in turn depends from claims 17, which in turn depends from claim 15. Claim 15 recites “the first chamber and the second chamber being separated by a heat conducting wall”. This contradicts claim 19, which, as set forth above, recites that the second chamber and the heat conducting wall are separated by the first chamber. Because of the contradictory subject matter of claim 19, a meaningful search of said claim could not be performed, rendering claim analysis with respect to novelty or non-obviousness impossible.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 12-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binning et al. (USP 4,721,575) in view of Slater et al. (USP 4,166,802).

Regarding claim 12, Binning et al., in Fig. 2-3 and 6-7, discloses an installation comprising:

- a high pressure pump for feeding under high pressure the aqueous fluid comprising carbonaceous material to be gasified (C5/L51-55) to an elongated tubular reactor (18, 56);

- first end of said tubular reactor having an inlet for aqueous fluid comprising carbonaceous material to be gasified (Fig. 3 and C7/L14-27);
- second end of said tubular reactor having an outlet for a product stream comprising gas and the aqueous fluid poor in carbonaceous material (Fig. 3 and C7/L14-27);
- said tubular reactor (18, 56) provided in a chamber of an incinerator (18, 58);
- wherein said chamber is separated from the lumen of the tubular reactor by means of heat conducting reactor wall (Fig. 3);
- at the side of the outlet of the tubular reactor the chamber is provided with a first inlet for oxygen comprising gas and a second inlet for a fuel (Fig. 3 and 7, C7/L14-27 and C8/13-29);
- at the side of the inlet of the tubular reactor the chamber is provided with an exhaust for combustion products (Fig. 3 and C7/L14-27);
- the arrangement of inlets and outlets providing for counterflow heat-exchange over the course of treatment (Fig. 3 and C7/L14-27);
- wherein the outlet of the tubular reactor (18) is connected to means (86) for cooling the product stream (49) and means (50) for the separation of the gas (52) the aqueous fluid poor in carbonaceous material (54).

While the reference discloses installation for gasification of aqueous fluid comprising carbonaceous material to be gasified for disposal of waste streams (abstract) to produce gas and aqueous fluid poor in carbonaceous material (as set forth above) and that degree of oxidation depends on specific design of said installation (C5/L64-67) the reference does not explicitly disclose any specific composition of said produced gas.

Slater et al. teaches that it is known to use a gasification installation similar to the installation of Binning et al. to convert aqueous fluid comprising carbonaceous material to be

gasified to a combustible gas (C1/L9-66). Also the reference teaches that specific composition of product gas depends on relative proportions of carbonaceous material to be gasified to oxygen in the reactor (C1/L14-23).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the design of the installation of Binning et al. and to control the feed rates of oxygen to said installation, as taught by Slater et al., for the purpose of improving operation profitability by recovering high value combustible gas.

Regarding claims 13 Binning et al. in view of Slater et al. disclose all of the claim limitations as set forth above. Additionally Binning et al. discloses the installation further comprising a heat exchanger (14) for exchanging heat between the carbonaceous material depleted fluid coming from the tubular reactor and the aqueous fluid comprising carbonaceous material to be gasified. While the reference does not disclose said heat exchanger being a countercurrent heat exchanger, as the reference is not limited to any specific heat exchanger design and as countercurrent heat exchangers are conventional, using a countercurrent heat exchanger in the system of Binning et al. would amount to nothing more than a use of a known apparatus for its intended use in a known environment to accomplish entirely expected result.

Regarding claim 15, Binning et al., Fig. 2-3 and 6-7, discloses an installation comprising:

- a gasification reactor having a substantially elongated first chamber (18, 56) and a substantially elongated second chamber (18, 58)
- the first chamber comprising an inlet opening for aqueous fluid comprising carbonaceous material to be gasified (Fig. 3 and C7/L14-27);
- the first and second chambers being separated by a heat conducting wall (Fig. 3);
- wherein along said wall aqueous fluid comprising carbonaceous material to be gasified is

conducted in counterflow to an aqueous fluid which, as a result of thermal treatment, has became poor in carbonaceous material (Fig. 3 and C7/L14-27);

- further comprising means (50) for separating the gas (52) and the aqueous fluid (54), which as a result of thermal treatment, has became poor in carbonaceous material;
- further comprising and exhaust (52) for the gas;
- wherein the second chamber is provided with an inlet opening for the supply of oxygen-comprising gas via a pipe to aqueous fluid, which as a result of thermal treatment, has became poor in carbonaceous material and an outlet for fluid which has been subjected to thermal treatment and oxidation (Fig. 3 and 7, C7/L14-27 and C8/13-29).

While the reference discloses installation for gasification of aqueous fluid comprising carbonaceous material to be gasified for disposal of waste streams (abstract) to produce gas and aqueous fluid poor in carbonaceous material (as set forth above) and that degree of oxidation depends on specific design of said installation (C5/L64-67) the reference does not explicitly disclose any specific composition of said produced gas.

Slater et al. teaches that it is known to use a gasification installation similar to the installation of Binning et al. to convert aqueous fluid comprising carbonaceous material to be gasified to a combustible gas (C1/L9-66). Also the reference teaches that specific composition of product gas depends on relative proportions of carbonaceous material to be gasified to oxygen in the reactor (C1/L14-23).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the design of the installation of Binning et al. and to control the feed rates of oxygen to said installation, as taught by Slater et al., for the purpose of improving operation profitability by recovering high value combustible gas.

While Binning et al. discloses that product gas is separated from the aqueous fluid poor in carbonaceous material (as set forth above), the reference does not disclose that said separation occurs before said aqueous fluid poor in carbonaceous material is fed into the second chamber.

Since it would have been obvious to one having ordinary skill in the art at the time of the invention to operate the installation of Binning et al. in such manner as to produce combustible gas, as set forth above, it would have been obvious to one having ordinary skill in the art at the time of the invention to separate and recover said combustible gas from a stream which is being used further in said installation. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to separate said combustible gas from aqueous fluid poor in carbonaceous material before said aqueous fluid poor in carbonaceous material is fed into the second chamber. Further, it has been held that rearranging parts of an invention involves only routine skill in the art, *In re Japikse*, 86 USPQ 70.

While the references do not explicitly disclose use of a pumping organ to feed oxygen-comprising gas to the installation of Binning et al., as oxygen-comprising gas is fed to said installation, the presence of a pumping organ is necessary in the installation of Binning et al.

Regarding claims 16 Binning et al. in view of Slater et al. disclose all of the claim limitations as set forth above. Additionally Binning et al. discloses the installation wherein the means for separating the gas and the aqueous fluid, which as a result of thermal treatment, has become poor in carbonaceous material comprise a heat exchanger (86).

12. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Binning et al. (USP 4,721,575) in view of Slater et al. (USP 4,166,802), as applied to claim 12 above, and further in view of Blaskowski (USP 3,818,869) or Bailie (USP 3,853,498).

Regarding claims 14 Binning et al. in view of Slater et al. disclose all of the claim

limitations as set forth above. Additionally Binning et al. discloses that raw materials (including oxygen comprising gas) need to be preheated (C2/L48-56) but the reference does not explicitly disclose said oxygen comprising gas being pre-heated by combustion products from the incinerator chamber.

Blaskowski (C2/L20-35) and Bailie (C7/L66-C8/L12) teach that it was well known in the art to use combustion products from an incinerator to preheat oxygen comprising gas used in said incinerator to improve process efficiency by heat conservation.

It would have been obvious to one having ordinary skill in the art at the time of the invention to preheat said oxygen comprising gas in the installation of Binning et al. in a heat exchanger using combustion products from the incinerator chamber, as taught by Blaskowski or Bailie for the purpose of improving process efficiency by heat conservation.

While the references do not disclose said heat exchanger being a countercurrent heat exchanger, as the references are not limited to any specific heat exchanger design and as countercurrent heat exchangers are conventional, using a countercurrent heat exchanger in the installation of Binning et al. would amount to nothing more than a use of a known apparatus for its intended use in a known environment to accomplish entirely expected result.

13. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binning et al. (USP 4,721,575) in view of Slater et al. (USP 4,166,802), as applied to claim 15 above, and further in view of Paull et al. (USP 4,099,383).

Regarding claims 17 Binning et al. in view of Slater et al. disclose all of the claim limitations as set forth above. Additionally Slater et al. discloses that produced combustible gas can be used as fuel (C1/L55-59) but the reference does not explicitly disclose said installation comprising means for combustion of said combustible gas to yield heat and electricity.

Paull et al. teaches that it is known to use combustible gas produced by gasification of carbonaceous materials in means for combustion to yield heat and electricity (Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time of the invention to include means for combustion of combustible gas to yield heat and electricity in the installation of Binning et al. in view of Slater et al., as taught by Paull et al. since doing so would improve operation efficiency and would amount to nothing more than a use of a known apparatus for its intended use in a known environment to accomplish entirely expected result.

Regarding claims 18 Binning et al. in view of Slater et al. and further in view of Paull et al. disclose all of the claim limitations as set forth above. Additionally Binning et al. discloses the installation comprising a heat conducting surface for transferring heat released during combustion to at least one of the chambers (Fig. 3).

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

15. In view of the foregoing, none of the claims are allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453. The examiner can normally be reached on Monday through Thursday, from 9:00 AM to 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Calderola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.


Basia Ridley
Examiner
Art Unit 1764

BR
January 9, 2004